

Remarks/Arguments:

Amendments

The specification has been amended to correct typographical errors and to indicate the name of "TMPTA." Claim 1 has been amended to more particularly point out and distinctly claim the subject matter that applicants regard as the invention. Claim 3 has been amended to correct typographical errors. Support for the amendment to claims 10 and 14 is found on page 11, lines 15-17. Claims 21-29 have been canceled as drawn to an unelected invention. Claims 9, 18, and 20 have been canceled. Claims 8, 10-17, and 19 have been amended to change dependency.

Independent claim 7 has been canceled and replaced by new claim 30. Support for new claim 30 is found in original claims 7 and 9, as well as on page 5, line 34, to page 6, line 10; page 11, lines 6-11; page 13, lines 22-24; page 14, lines 7-8; and page 18, lines 24-26. Support for new claims 31-33 is found in original claim 9, and on page 13, lines 22-24. Support for new claim 34 is found on page 6, lines 6-7; page 13, lines 21-25; and page 14, lines 5-6. Support for new claim 35 is found on page 11, lines 9-11. Support for new claim 36 is found on page 14, lines 5-6. Support for new claim 36 is found on page 13, lines 21-24

It is submitted that no new matter is introduced by these amendments and new claims.

Claim Objections

Claims 3 and 6 were objected to. Claim 3 has been amended to remove the extra spaces. Claim 6 has been amended to spell out the specific terms that "DVB" and "TMPTA" stand for. It is submitted that this rejection has been overcome.

Rejection under 35 USC 112, first paragraph

Claim 18 was rejected as failing to comply with the enablement requirement. Claim 18 has been canceled.

Rejection under 35 USC 112, second paragraph

Claims 1-6 were rejected as indefinite because the phrase "the thin region" in line 15 of claim 1 lacked antecedent basis. Claim 1 has been amended to recite "areas of reduced thickness." It is submitted that this objection has been overcome.

Double Patenting Rejection

Claims 1-4, 7-9, and 15-17 were rejected on the ground of nonstatutory obviousness-type double patenting as unpatentable over claims 1-3, 14, and 19 of Chou, U.S. Patent 5,772,905 ("Chou") in view of Napoli, U.S. Patent 4,731,155 ("Napoli"). This rejection is respectfully traversed. Claims 7 and 9 have been canceled and claims 8 and 15-17 amended to depend, directly or indirectly on new claim 30. With respect to claims 1-4, this rejection is respectfully traversed.

Claim 1 is a method claim that recites deforming a polymeric composition capable of being deformed at a temperature of less than 200°C using a mold having a lateral dimension of less than 200 nm and replicating a mold pattern having at least one lateral dimension which is less than 200 nm. Napoli discloses embossing with nickel masters containing uniform rectangular grating patterns of 2, 0.85 and 0.7 micrometer wide peaks and valleys having vertical sides, dimensions that are much larger than 200 nm. Napoli, column 5, lines 3-7.

The Office alleges that "US Patent 5,772,905, clearly discloses the use [of] the thermal plastic polymer which is capable of being deformed by the mold." Office action of March 9, 2006, page 4, lines 28-29. This is improper. The double patenting rejection must be based on the claims of U.S. Patent 5,772,905, not its disclosure.

Nothing in claims 1-3, 14, and 19 of Chou, in Napoli, or in the combination thereof suggests to the person of ordinary skill in the art that mold patterns having a lateral dimension of less than 200 nm could successfully be produced at a temperature of less than 200°C. At best these disclosures make it obvious to try, but "obvious to try" is not to be equated with obviousness under 35 U.S.C. § 103. *Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 USPQ2d 1923, 1928 (Fed. Cir. 1990).

The Office has not made the *prima facie* case. The combination of claims 1-3, 14, and 19 of Chou and Napoli at best makes the invention recited in claim 1 "obvious to try." For this reason the obviousness-type double patenting rejection of claim 1, and of claims 2-4 dependent thereon, should be withdrawn.

Claims 8 and 15-17 have been amended to depend, directly or indirectly on new claim 30. However, new claim 30 also recites the same using "a mold having a lateral dimension of less than 200 nm" and replicating "a mold pattern having at least one lateral dimension which is less than 200 nm" limitations of claim 1. For the reason discussed above the obviousness-type double patenting rejection of claims 8 and 15-17 should also be withdrawn.

Rejection under 35 USC 102(b)

Claims 1-2, 7-9, 16-17, and 19 were rejected as anticipated by Jan Haisma, *et al.*, J. Vac. Sci. Technol. B, 14(6), 4124-4128 (Nov/Dec. 1996) ("Haisma").

Claims 7 and 9 have been canceled. Claims 8, 16-17, and 19 have been amended to depend on new claim 30. With respect to claims 1 and 2, this rejection is respectfully traversed.

The Office asserts that Haisma discloses heating the polymer to 80°C after being deformed and concludes that the polymer is capable of being deformed at a temperature of less than 100°C. Office action of March 9, 2006, page 6, lines 11-16. This assertion is respectfully traversed. The passage relied on says "The polymer was removed by applying a wet chemical step using a mixture of (NH₄)₂SO₄ and H₂SO₄, heated to 80°C." page 4125, column 2, last line, to page 4126, column 1, first line (emphasis added). From this passage it is apparent that it is the reagent that removes the polymer, a mixture of (NH₄)₂SO₄ and H₂SO₄, that is heated to 80°C. There is no indication that the polymer itself is capable of being deformed at a temperature of less than 100°C.

Haisma does not explicitly disclose that the polymeric composition is capable of being deformed by a mold at a temperature of less than 200°C. Therefore, the rejection of claims 1 and 2 as anticipated by Haisma should be withdrawn.

First Rejection under 35 USC 103(a)

Claims 3, 10-12, 14-15, and 20 were rejected as unpatentable over Haisma in view of Harmening, Proc. IEEE: Micro Electro Mechanical Systems, 202-207 (1992) ("Harmening").

The Office asserts that "Haisma" discloses the polymeric composition comprises approximately 70 weight percent monomer (p. 204, column 1). Office action of March 9, 2006, page 8, lines 3-4. The cited passage is a passage of Harmening, not Haisma, so applicants conclude Harmening was intended. This assertion is respectfully traversed.

Harmening discloses a technique based on the combination of a high-molecular weight polymethyl methacrylate with an internal adhesion promoter and a low molecular weight polymethyl methacrylate which is suitable for molding microstructures. Harmening, Abstract, p. 202. The resist layers were produced by radical polymerization of mixtures containing 30 parts by weight of polymethyl methacrylate and 70 parts by weight methyl methacrylate monomer. *Id.*, Experiment, first paragraph, p. 204. The resulting layer was then molded. *Id.*, second paragraph. That it, the molding step occurs after the methyl methacrylate has been polymerized to form the resist layer. Consequently, the resist layer that is molded contains a mixture of polymethyl methacrylates with differing molecular weights, not a monomer containing polymer.

Further, Harmening discloses forming patterns that have dimensions of below 10 micrometers and up to 340 micrometers. In contrast, applicants' claims recite forming structures that have at least one lateral dimension which is less than 200 nm. Thus, Harmening is not directed to nanoimprinting, but to a technology that produces much larger structures than applicants' invention. Because Harmening is non-analogous art, it can not be combined with Haisma.

The Office has not made the *prima facie* case. The references can not be combined in the manner indicated by the Office to produce applicants' invention. For this reason, the rejection of claims 3, 10-12, 14-15, and 20 as unpatentable over Haisma in view of Harmening should be withdrawn.

Second Rejection under 35 USC 103(a)

Claims 4 and 13 were rejected as unpatentable over Haisma in view of Yamamura, U.S. Patent 5,981,616 ("Yamamura"). This rejection is respectfully traversed.

Yamamura relates generally to the field of washable dry erase coloring compositions for drawing and coloring purposes. See, Yamamura, column 1, lines 5-7. It is not from the same field of endeavor, nor does it address the same problem as applicants' invention. Therefore, it is non-analogous art and can not be combined with Haisma. For this reason, the rejection of claims 4 and 13 as unpatentable over Haisma in view of Yamamura should be withdrawn.

Third Rejection under 35 USC 103(a)

Claim 5 was rejected as unpatentable over Haisma in view of Ito, U.S. Published Patent Application 2002/0102490 A1 ("Ito"). This rejection is respectfully traversed.

As discussed above, Haisma does not explicitly disclose a film comprising a polymeric composition capable of being deformed by a mold at a temperature of less than 200°C. The Office has not asserted that Ito makes such a disclosure.

The Office has not made the *prima facie* case. The combination of Haisma and Ito in the manner indicated by the Office does not produce applicants' invention. Therefore, the rejection of claim 5 as unpatentable over Haisma in view of Ito should be withdrawn.

Rejection under 35 USC 103(a)

Claim 6 was rejected as unpatentable over Haisma in view of Sachdev, U.S. Patent 4,894,279 ("Sachdev"). This rejection is respectfully traversed.

Sachdev relates to improvements in protective coatings for electroerosion print media. See, Sachdev, column 1, lines 8-9. It is not from the same field of endeavor, nor does it address the same problem as applicants' invention. Therefore, it is non-analogous art and can not be combined with Haisma. For this reason, the rejection of claim 6 as unpatentable over Haisma in view of Sachdev should be withdrawn.

Extension of Time


The fee for a three-month Extension of Time accompanies this communication.

Conclusion

It is respectfully submitted that the claim is in condition for immediate allowance and a notice to this effect is earnestly solicited. The Examiner is invited to phone applicants' attorney if it is believed that a telephonic or personal interview would expedite prosecution of the application.

Respectfully submitted,

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Dated: September 8, 2006

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